

REMARKS

Claims 1 through 20 were presented for examination. Claims 1 through 20 were rejected.

Claims 1 through 19 have been amended to conform to proper format and respond to the objections and rejections of the examiner.

Claims 20 is formally canceled in this amendment, without prejudice, and the applicants reserve the right to re-present these claims in this or in another application.

In an office action dated 10/31/ 2003, the examiner noted that although the reply by the applicant filed on 9/15/2003 to earlier office action dated 7/17/2003 was *bona fide*, 1) the amendment to the claims did not comply with the requirements of 37 CFR 1.121(c) due to the lack of a claim listing with proper status identifiers, and 2) the substitute specification also filed in the reply dated 9/15/2003 did not conform to 37 CFR 1.125(b) and (c) because no marked-up copy showing changes was included nor a statement that "No new matter has been entered." The examiner further noted that the substitute specification was not entered.

In this amendment, the applicants submit amended claims that now comply with the requirements of 37 CFR 1.121(c), and a new substitute specification that complies with 37 CFR 1.125 (b) and (c).

The following remarks pertain to the examiners office action dated 7/17/2003.

Objections to the Claims

Claims 1-19 have been rewritten to correct informalities objected to by the examiner. In particular, asterisks have been removed and proper punctuation has been used. Additionally, all instances of the word "planer" have been replaced with "planar".

Proper use of "said" and "the" has been made, and the lack of antecedent basis for the terms "the substrate electrode" and the pyro-optical film" has been addressed.

35 U.S.C. 112 Rejection of Claims 1 through 20

In the office action, the examiner points out that the term "low-level" in claim 1 is a relative term that was not defined in the claim or original specification. Paragraph [0015] of the substitute specification now describes "low-level radiation" as being radiation typically of wavelength greater than 2 micrometers, when absorbed into the subject pixel, typically heats with a power ranging from femtoWatts to nanoWatts.

The examiner further noted that the phrase "a controlled thickness" made the

language of claim 1 confusing, and also lacked antecedent basis. Claim 1 has been rewritten to provide clarity to the claimed structure and eliminate relative terms, and as amended recites:

1. An apparatus comprising;
a pixel structure sensitive to incident low-level photonic radiation comprising;
a planar substrate;
a patterned metallic mirror disposed on the top surface of said planar substrate;
a platform connected to said planar substrate by at least one tetherbeam, said tetherbeam having low thermal conductivity, wherein said platform and said planar substrate are separated by an air gap, said air gap forming a first Fabry-Perot cavity having a spacing that substantially maximizes the absorption of incident low-level radiation; and
a pyro-optical film disposed on a surface of said platform, wherein said pyro-optical film has an optical transmissivity at the wavelength of an optical carrier beam that depends on the temperature of said pyro-optical film, and wherein said pyro-optical film defines a second Fabry-Perot cavity, wherein a thickness of said pyro-optical film substantially maximizes the thermal modulation index at the wavelength of said optical carrier beam.

The examiner noted that "the photodetector" referred to in claims 5 and 6 lacks antecedent basis. Claims 5 and 6, as amended, recite:

5. The apparatus of claim 1 wherein said pixel structure further comprises:
means for periodically chopping incident low-level radiation; and
means for gating the amplitude of said optical carrier beam synchronously with said periodically chopped incident low-level radiation.
6. The apparatus of claim 5 wherein said pixel structure further comprises:
an electrostatic actuator for changing the thickness of said air gap;
and
an external photodetector wherein said photodetector detects said optical carrier beam and is gated in synchronization with the movement of said electrostatic actuator.

Claim 5, as amended, no longer recites a limitation that refers to "the photodetector", and "the photodetector" is now positively recited as a limitation in claim 6.

Claims 5 and 6 were also rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. Both claims 5 and 6 are dependent upon claim 1 which, as amended, positively recites an air gap.

Claims 6 and 7 were also rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting the essential elements of the photodetector and a means for synchronous gating of the photodetector with the periodic movement of the electrostatic actuator and platform.

A means-plus-function clause providing a means for gating the amplitude of said carrier beam has been added to claim 5, and support for this clause has been added to the specification in paragraph [0015]. Additionally, an external photodetector is now positively recited in claim 6.

Request for Reconsideration Pursuant to 37 C.F.R. 1.111

Having responded to each and every ground for objection and rejection in the Office action mailed November 15, 2000, applicants request reconsideration of the instant application pursuant to 37 CFR 1.111 and request that the Examiner allow all of the pending claims and pass the application to issue.

Should there remain unresolved issues the applicants respectfully request that Examiner telephone the applicants' attorney at 732-578-0103 x12 so that those issues can be resolved as quickly as possible.

Respectfully,
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Date 2/27/2004

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